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REMARKS

Objections

The Examiner objected to the title as being not descriptive. The title has been amended to overcome the objection.

The Examiner objected to the drawings under 37 CFR 1.83(a) for not showing the concepts described in claims 3, 6, 18, 19, 23, and 26. Figures 4, 5 and 6 have been amended as described above to overcome the objection. The text of the specification has been amended to include reference numbers. No new matter has been added since the features added to the Figures were fully described in the specification, as originally filed.

The Examiner objected to claim 21 for various informalities. Claim 21 has been amended to correct the informalities.

35 U.S.C. §112 Rejections

The Examiner rejected claims 6, 18-20, and 25-27 as being indefinite. These claims have been amended to overcome the rejections. Claims 6 and 19 have been amended to clarify "aligning ahead," in accordance with the description on page 10, line 20 – page 11, line 12 of the specification. Claim 18 has been amended to correct an omission in a previous amendment. Claims 25 and 27 have been amended as suggested by the Examiner.

These claim amendments should also overcome the §112 rejections of claims 20 and 26.

Allowable Subject Matter

Claims 3, 18, 23 and 26 have been indicated as allowable if rewritten in independent form, provided any §112 rejections affecting claims 18 and 26 are overcome. Limitations from claims 3, 18, 23, and 26 have been incorporated into their respective base claims 1, 27, 21, and 25; and claims 3, 18, 23, and 26 have been canceled. Therefore, amended independent claims 1, 21, 25, and 27 should now be allowable.

The remaining rejected claims 4-8, 19-20, and 24 are all properly dependent on one of the independent claims, and thus allowable therewith. Each of the dependent claims adds one or

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more further limitations that enhance patentability, but those limitations are not presently relied upon. For that reason, and not because the Applicant agree with the Examiner, no rebuttal is offered to the Examiner's reasons for rejecting the dependent claims.

New Claims

The Examiner has acknowledged, by indicating that claim 3 is allowable if rewritten in independent form, that none of the cited references, alone or in combination, disclose or suggest "comparing a most significant bit of a pointer to a first sub-buffer to a most significant bit of a pointer to a second sub-buffer to determine whether processing one of the plurality of instructions will deplete any of the buffer areas" in the context of the limitations of claim 1.

By way of example only, the following portion of the specification describes comparing the most significant bits of the pointers to the sub-buffers (in this example, buffers 520-555) to determine whether an instruction occupies sub-buffers that include a transition between two of the buffer areas (in this example, buffer 510 and 515). This transition is used to determine whether a buffer area is depleted.

> The transition block 645 may also determine a buffer 510, 515 is depleted by comparing the most significant bits (MSB) of pointers to the buffers 520-555.
> (page 14 lines 7-9)   ***
> As stated above, an instruction may occupy a plurality of the 16-bit buffers 520-555. For example, a 64-bit instruction may begin in buffer 525 and end in buffer 540. The pointer value of the buffer 525 at the beginning of the instruction is 001, and the pointer value of the buffer 540 at the end of the instruction is 100. Thus, the most significant bit of the buffer pointer changes from "0" to "1", thereby indicating a transition from the buffer 510 to the buffer 515. By comparing the most significant bits of the pointers to the buffers 520-555, the transition between the buffers 510 and 515 may be determined.
> (page 15, lines 1-11)

Applicant submits that Martin (or Zuraski in view of Martin) also does not teach or suggest at least "determining whether processing the second instruction will deplete at least one of said plurality of buffer areas based on determining whether the second instruction occupies sub-buffers that include a transition between two of the buffer areas." Therefore, new claim 28 is patentable.

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Claims 29-31

Each of the new claims 29-31 includes a similar limitation not disclosed or suggested by Martin (or Zuraski in view of Martin, or Narayan in view of Nishii). For example, claim 29 recites "a predictor, operating to predict when at least one of the plurality of buffer areas will be empty based on determining whether an instruction occupies subparts that include a transition between two of the buffer areas." Claim 30 recites "[determining] whether processing the second instruction will deplete at least one of the plurality of buffer areas based on determining whether the second instruction occupies sub-buffers that include a transition between two of the buffer areas." Claim 31 recites "predicting which of said buffer areas within said cache will be depleted of instruction data based on determining whether an instruction occupies subportions that include a transition between two of the buffer areas."

Please apply any charges or credits to deposit account 06-1050.

Respectfully submitted,

Date: 9-27-05

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Amendments to the Drawings:

The attached sheets of formal drawings include changes to Figures 4, 5 and 6 and replace all sheets of the original informal drawings.

Figure 4, has been amended to show a cache latency of 2 cycles (labeled as 410) to illustrate the example of looking ahead by 2 cycles described in the specification.
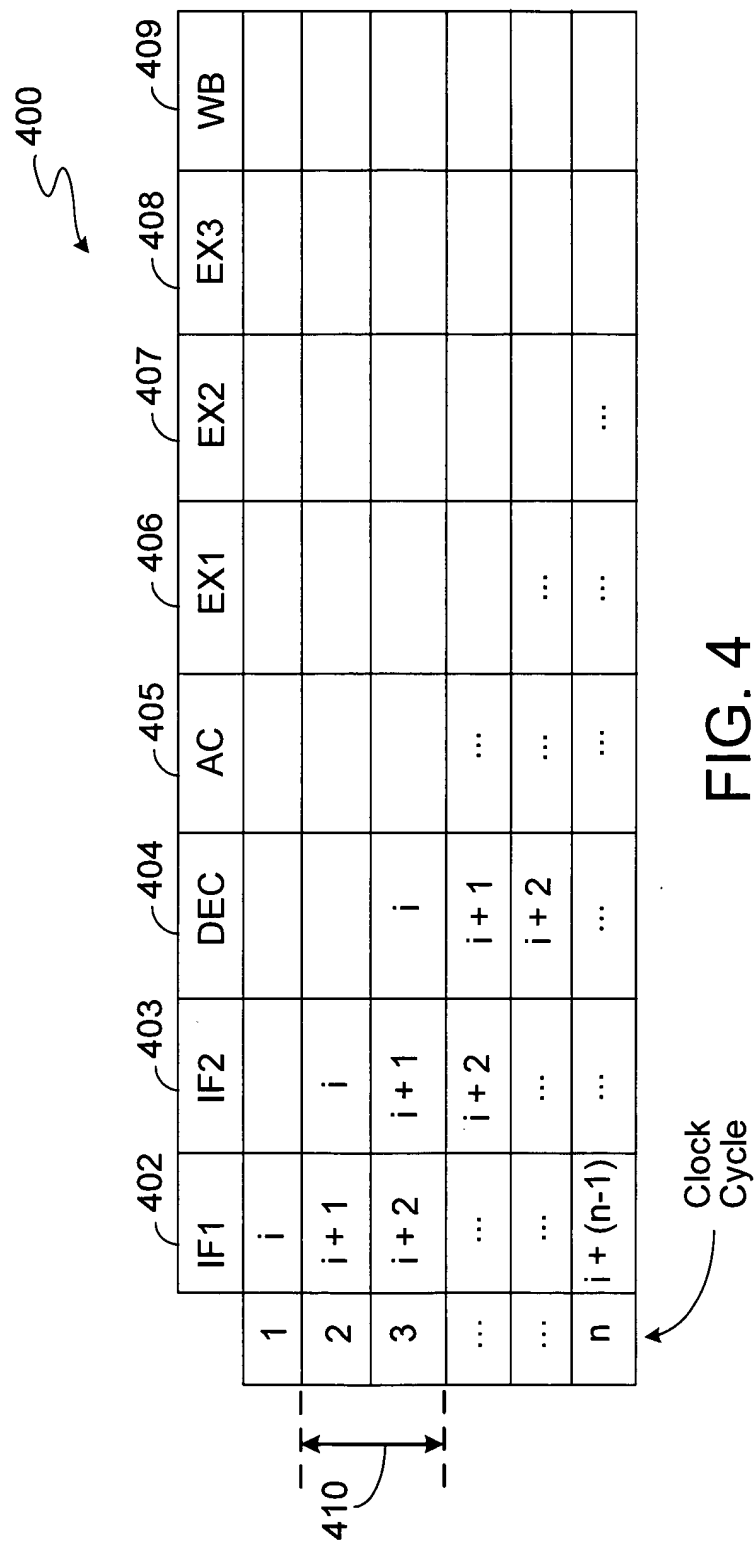
Figures 5 and 6, have been amended to explicitly show pointer signal lines (labeled as 655) used by the transition block 645 to determine the values of the pointers to the buffers 520-555.

A typographical error in Figure 6 has also been corrected to conform Figure 6 to the description on page 13, lines 3-4 by changing reference numbers 505' and 510' to reference numbers 510' and 515'.

Formal drawings have also been provided for all of the figures.

Attachments following last page of this Amendment:
        Replacement Sheets (3)
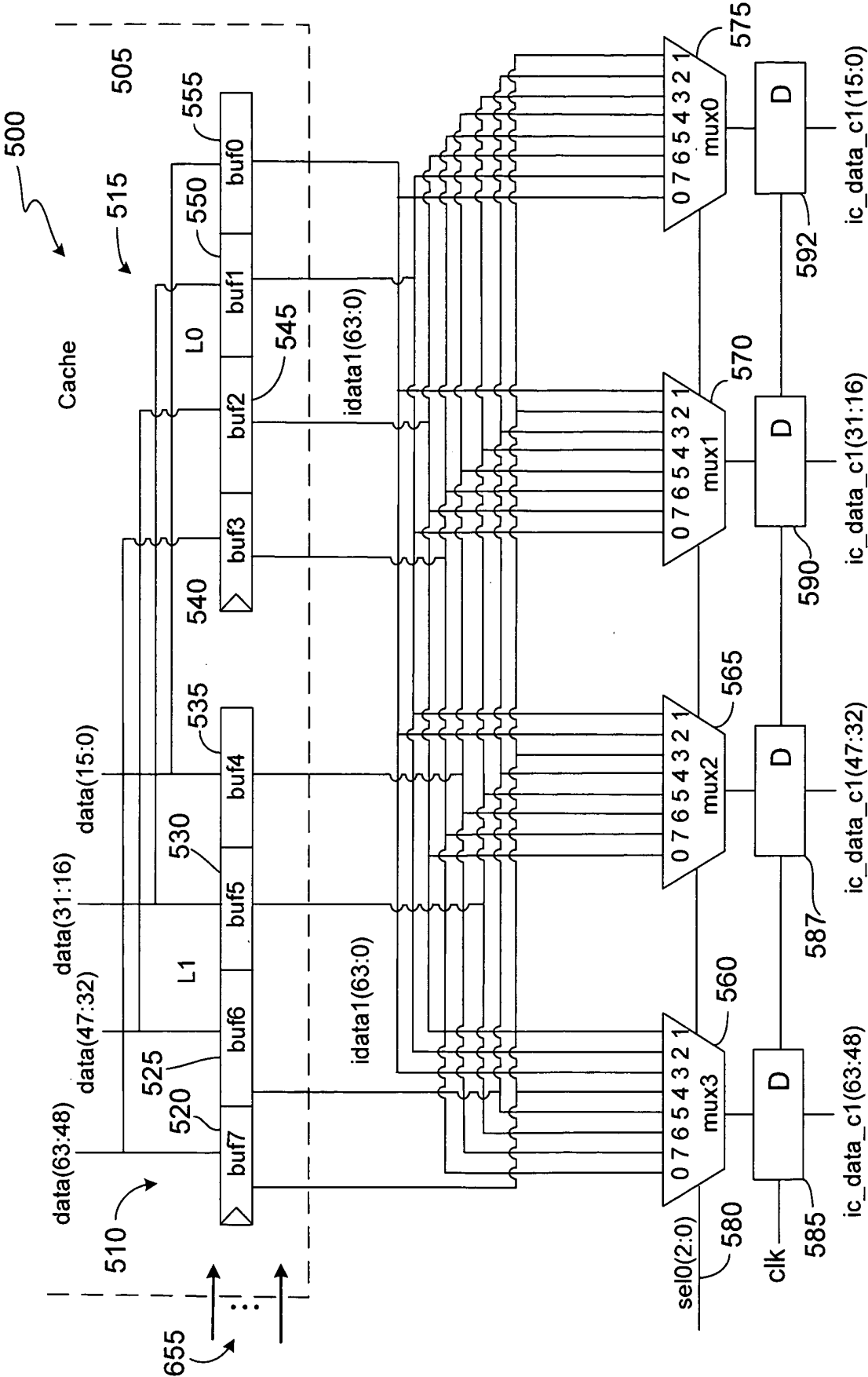   Annotated Sheets Showing Changes (3)
        Formal Drawing Sheets (5)
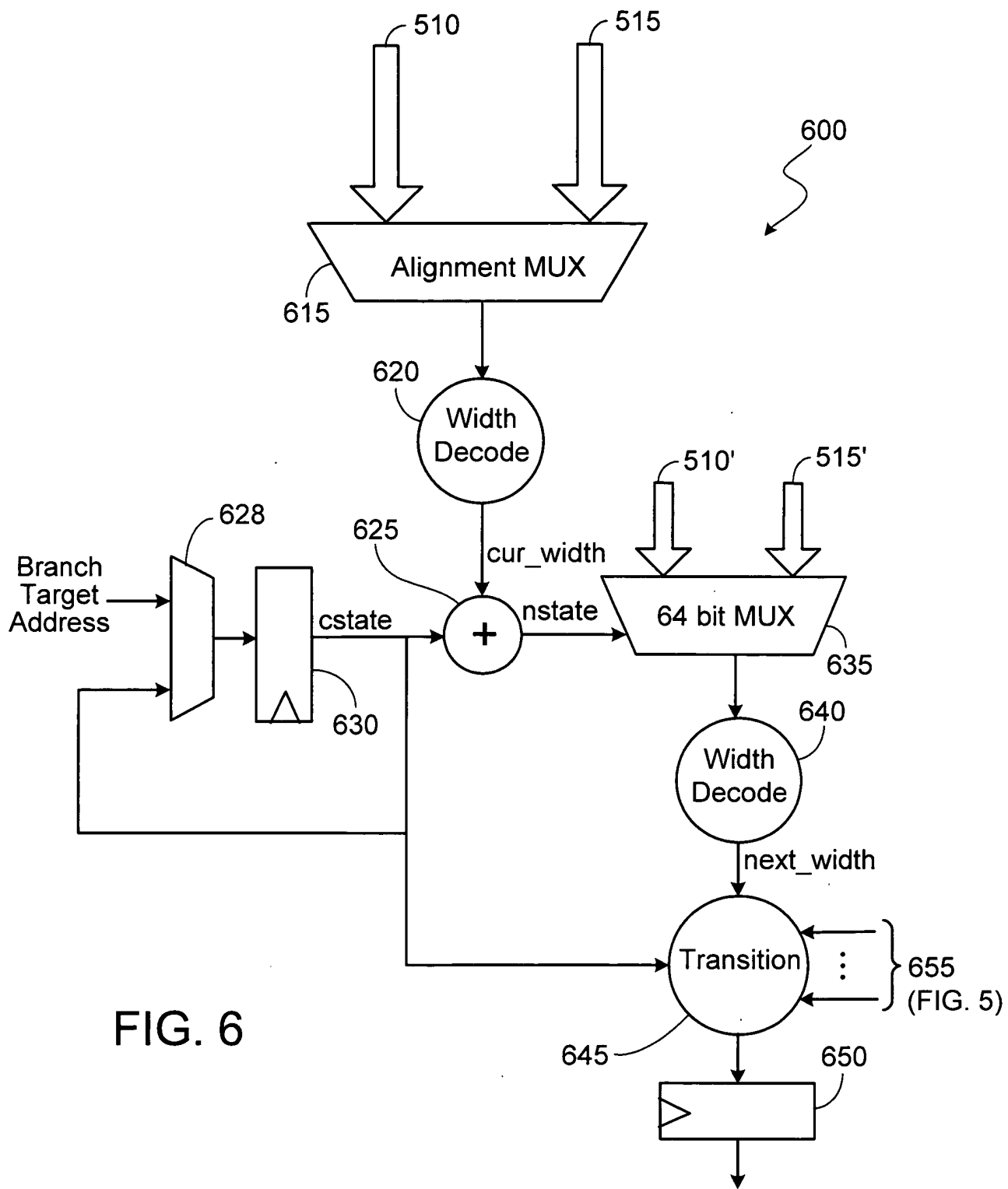
400

	402 IF1	403 IF2	404 DEC	405 AC	406 EX1	407 EX2	408 EX3	409 WB
1	i							
2	i + 1	i						
3	i + 2	i + 1	i					
⋮	⋮	i + 2	i + 1	⋮				
⋮	⋮	⋮	i + 2	⋮	⋮			
n	i + (n-1)	⋮	⋮	⋮	⋮	⋮		

Clock
Cycle

410

FIG. 4

Annotated Sheet Showing Changes

FIG. 5

FIG. 6